

7. Notes upon the Anatomy of Monkeys of the Genus *Pithecia*. By FRANK E. BEDDARD, M.A., F.R.S., F.Z.S., Prosector to the Society.

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(Text-figures 286-294.)

(1) *Pithecia pithecia*.

A young male example of this monkey lived only for a short time in the menagerie and came into my hands on September 3. Inasmuch as our knowledge of the viscera of this genus is not extensive, I took a number of notes upon certain organs which were best studied in the fresh condition, and preserved for future reference the remaining viscera. The present communication to the Society is the result of the examination of these viscera, from which I am able to compile some account of the principal organs of the body.

So far as I am aware, there is but one paper dealing with the general anatomy of the genus *Pithecia*, and that is by the late Sir W. H. Flower (5). There are, however, notes upon other species scattered through various publications dealing with the New World Primates of which the accompanying bibliography (see p. 943) includes those that I have consulted, as well as others dealing with allied forms of Platyrrhines.

§ *Brain*.

The brain was carefully extracted (after noting the arrangement of the sulci in the fresh brain) and preserved in alcohol. The total length of the hemispheres is 48 mm.; the greatest breadth of the cerebrum is 38 mm. The cerebellum is completely hidden when the brain is viewed from above.

In its general features the brain of *Pithecia pithecia* very closely resembles, as might be expected, that of *Pithecia monachus*, figured by the late Sir W. H. Flower (5, p. 329, figs. 1, 2, 3), one of which figures (fig. 1) is practically identical with Dr. Elliot Smith's representation (11, p. 415, fig. 61) of *Pithecia*, where the brain is drawn from the dorsal aspect. Dr. Elliot Smith does not mention the species referred to, at any rate in the legend beneath the figure. It might, in my opinion, have been copied either from Flower's figure or from the actual brain from which that figure was drawn. Another brain of this species is figured from the lateral aspect by Dr. Elliot Smith in the "Catalogue of the Royal College of Surgeons" (12, p. 392, fig. 230), in which work there is also some description of the brains of *P. satanas* and *P. albinasa*. Concerning the first of these two species, Mr. Forbes has made some observations (3 a). All of these three species of *Pithecia* have been dealt with by Drs. Kükenthal and Ziehen,

whose observations (9) refer, as it would appear, to the actual specimens upon which the facts described in the other memoirs are based. These authors figure a lateral view of the brain of *P. albinasa* and a mesial section of the brain of *P. monachus*. As to previous observations upon the brain of the genus *Pithecia*, they only mention Flower (5) and Turner (13).

In the brain of *Pithecia pithecia* the *sulcus rectus* was evidently of much the same proportionate size, but each sulcus was a simple obliquely running furrow. There was no branch upon the left-hand furrow (or upon the right), such as is represented in all those figures of the brain of *P. monachus* to which I have referred above. It is interesting to note that in *P. satanas* (according to Elliot Smith) it is also the left hemisphere which has a triradial *sulcus rectus*.

The *sulcus centralis* seems to be exactly as in *Pithecia monachus*. Its inner end (some way distant from the mesial edge of the hemisphere) is 23 mm. from the anterior end of the hemisphere and 25 mm. distant from the hinder end of the hemisphere. It is thus situated very near to the middle point of the brain. These proportions appear to agree very closely with those indicated in Dr. Elliot Smith's figure of the brain of *Pithecia monachus* (11, p. 415, fig. 61).

There are indications of a *precentralis* on each side; these appear to be rather fainter than the occasional indications of such a furrow in *P. monachus* and *P. satanas*.

The *sulcus lateralis* (or *intraparietalis*) is curved like the letter "S," only in the reverse direction. Its anterior end is situated almost exactly midway between the fissure of Rolando (*centralis*) and the Sylvian. It is a little more extensive on the left side, where it ends rather nearer to the middle interhemispherical sulcus. Posteriorly this sulcus is quite unconnected with the *sulcus transverso-occipitalis*, as will be seen by an inspection of the accompanying figure (text-fig. 286, p. 930).

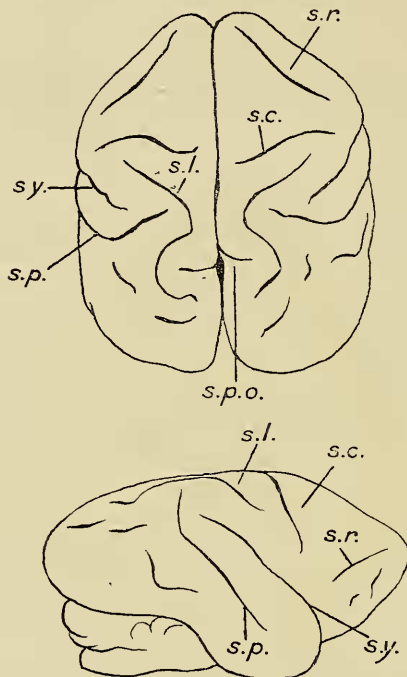
The *sulcus parieto-occipitalis* appears for some distance upon the dorsal aspect of the brain, and the two furrows right and left have to each other exactly the reverse relation to that which is shown in the same furrows in *Pithecia monachus* by both Flower and Elliot Smith. In the latter the left-hand furrow lies rather in front of the right, while in the brain of *P. pithecia* examined by myself the right-hand furrow is distinctly in advance of the left. This position of the parieto-occipital fissure is obviously related to the asymmetry shown by the lateral fissure, since in both hemispheres the parieto-occipital exactly divides into two the area of brain partly enclosed by the semicircle formed by the posteriorly situated half of the lateral fissure.

The *Sylvian* fissure has the same relations to the *postsylvian*, or *parallel* fissure, that it is represented to have in the specimen of the brain of *P. monachus* figured by Elliot Smith in the "Catalogue of the Royal College of Surgeons Museum"; that is to say, the two fissures incline towards one another superiorly though

they do not meet. They more nearly meet, however, on the right side than on the left.

The furrows on the mesial aspect of the hemispheres differ in some small details from the corresponding furrows figured by Flower and Elliot Smith in the brain of the species *Pithecia monachus*.

Text-fig. 286.

Brain of *Pithecia pithecia*.

The upper figure represents the dorsal aspect, the lower figure the right-hand lateral aspect.

s.c. Sulcus centralis. s.l. Sulcus lateralis. s.p. Postsylvian fissure. s.p.o. Sulcus parieto-occipitalis. s.r. Sulcus rectus. sy. Sylvian sulcus.

The *mesial parieto-occipital* fissure differs rather on the two hemispheres; it is much deeper as well as longer on the left side than on the right. The furrow is nearly vertical to the longitudinal axis of the hemisphere, and at the lower end inclines slightly forward on the left hemisphere and slightly backwards on the right. It was not double as it is indicated to be in *Pithecia monachus* by Elliot Smith.

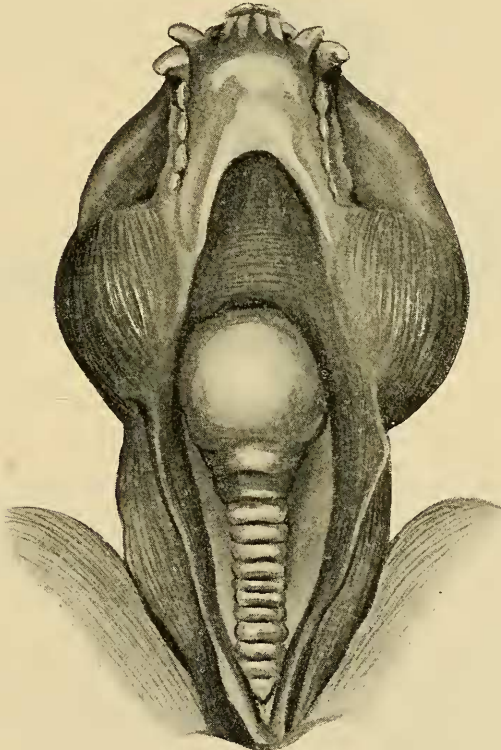
The *calcarine* fissure also differs on the two sides of the brain. In that of the right hemisphere the anterior limb of the **Y** is very

much reduced in length, as is represented to be the case in Flower's figure (5, p. 330, fig. 4 *b*) of the mesial aspect of the brain of *P. monachus*. The backwardly running part of the Y, which is parallel to the surface of the hemisphere, is very much the longer. This part of the calcarine complex is moreover much nearer to the surface of the brain than is that of the left hemisphere.

§ *Larynx and Trachea.*

The accompanying drawing (text-fig. 287) represents the larynx and a portion of the trachea of *Pithecia pithecia* shown in due relation to the adjacent structures. The body of the hyoid is

Text-fig. 287.

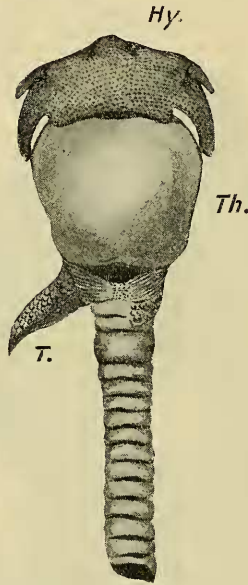


Larynx and a portion of the trachea of *Pithecia pithecia* seen *in situ* from the ventral surface.

not exposed, being covered by the platysma muscle which is represented as uncut. The enormously increased thyroid cartilage is seen to occupy a very large space between the rami of the

mandible. More than one half of the cartilage, however, lies posteriorly to the angle of the jaws. When the hyoid body is exposed by cutting the superjacent muscles of the throat it is seen to lie close to and even in contact with the thyroid cartilage. The thyro-hyal ligament of course exists, and the hyoid can by stretching be removed from its contiguity to the thyroid cartilage of the larynx. But when the tension is relaxed the bone and the cartilage are again brought into contact. It is especially to be noted that there is no dilatation of the hyoid such as occurs in *Mycetes*; the bone in *Pithecia pithecia* is of quite normal form.

Text-fig. 288.

Hyoid and larynx of *Pithecia pithecia* viewed from the ventral surface.

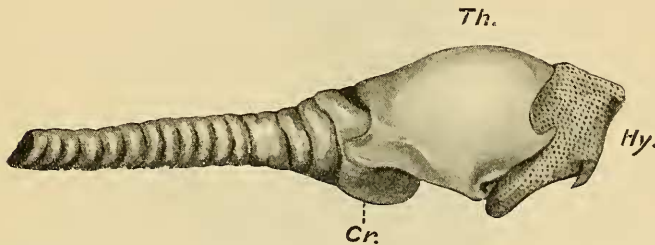
Hy. Hyoid. *T.* Thyroid body. *Th.* Thyroid cartilage of larynx.

Sir W. Flower's account of the anatomy of *Pithecia monachus* (5), which touches upon most of the viscera, contains no mention of the laryngeal structures, with which species therefore I am not able to compare *Pithecia pithecia* in this respect. The thyroid cartilage, as already mentioned, is very large. It is of spherical aspect and measurements confirm this; the length was 20 mm. and the breadth 21 mm. The texture of the inflated bulla shows that it is entirely cartilaginous. I could find no ossification anywhere. The animal, it is to be recollected, is a male. It is important to take notice of the facts which have just

been mentioned, since the late Prof. Weldon observed (14) in a female monkey of the genus *Callithrix* not only that the thyroid cartilage was swollen but that there was a patch of ossification on each side, which facts "seem to show the possible existence of a howling apparatus in the male."

It is obvious, however, from Weldon's figure of the larynx of *Callithrix gigot* (14, p. 9, fig. 4), that the thyroid cartilage, if "swollen," is relatively small to the rest of the cartilage and bones in the neighbourhood, when compared with *Pithecia*. So large and swollen is this cartilage in *Pithecia pithecia* that there is hardly any thyroid notch along the upper ventral border where the cartilage is in contact with the body of the hyoid, nor is there any marked "Adam's apple." The whole surface of the cartilage ventrally is uniformly convex. The proportion between the thyroid and cricoid pieces of the larynx and the body of the hyoid are to be seen in the figure of the isolated larynx seen from the ventral aspect (text-fig. 288). Although the thyroid

Text-fig. 289.

Hyoid and larynx of *Pithecia pithecia* viewed laterally.

Cr. Cricoid cartilage. Other letters as in text-fig. 288.

cartilage is smooth and almost bubble-like when viewed from the ventral aspect, it is flattened and ridged laterally where the thyrohyoid muscle is attached. As in *Callithrix* (cf. Weldon), the anterior and posterior cornua of the thyroid cartilage are not very pronounced. The posterior cornu is the most conspicuous. So far it is clear that *Pithecia* resembles *Callithrix* more nearly than it does *Myocetes* *. The cricoid is ossified in the middle line ventrally, which fact is indicated by dots in the accompanying figures (text-figs. 288 & 289) of the larynx of *Pithecia pithecia*. The lateral regions of the cricoid are not ossified. The lateral view of the laryngeal cartilages (text-fig. 289) may be compared with Weldon's figure of the same cartilages in *Callithrix*, when the differences in their proportions will be very apparent. The hyoid bones are correctly figured in the same drawings. The anterior cornu is cartilaginous. The tracheal rings present only one feature worthy

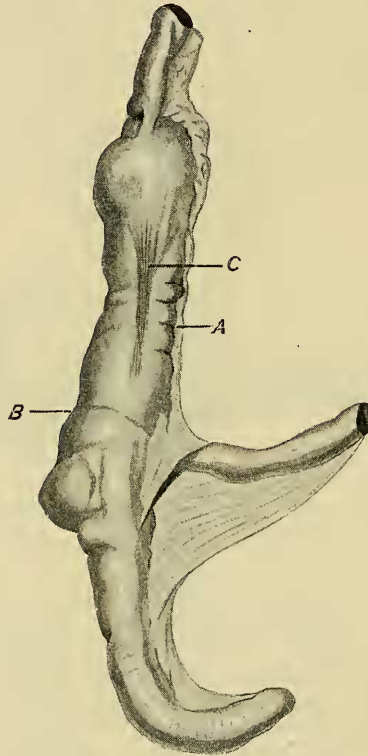
* The larynx, &c. of this genus is figured by Wiedersheim in the 1886 edition of the *Vergleich. Anat. der Wirbelthiere*, p. 641.

of special notice—and that is the partial fusion of the third and fourth annuli, as is also shown in the figure to which reference has been made.

§ *Alimentary Viscera.*

The *tongue* measures 36 mm. in length and 14 mm. in breadth. The Mayer's organ on each side measures 8 mm. and is concave upwards; each organ consists of 10 or 11 folds. There are only

Text-fig. 290.



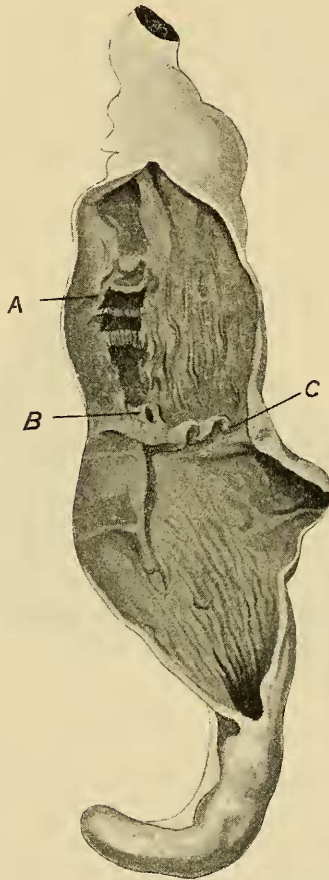
Caecum and adjacent regions of gut of *Pithecia pithecia*.

- A. Sacculations of colon. B. Division between colon and caecum.
C. Band on colon related to sacculations.

three circumvallate papillæ disposed in the usual V. The fungiform papillæ amount to fourteen or fifteen on each side, and all lie well in front of the circumvallate papillæ. On the right side is a single fungiform papilla just in front of the right-hand circumvallate papilla. There is not a corresponding one on the left side.

The general shape of the *stomach* calls for no particular comment. It does not appear to me that the cardiac and pyloric orifices are much approximated, as Flower has stated them to be in *Pithecia monachus*.

Text-fig. 291.



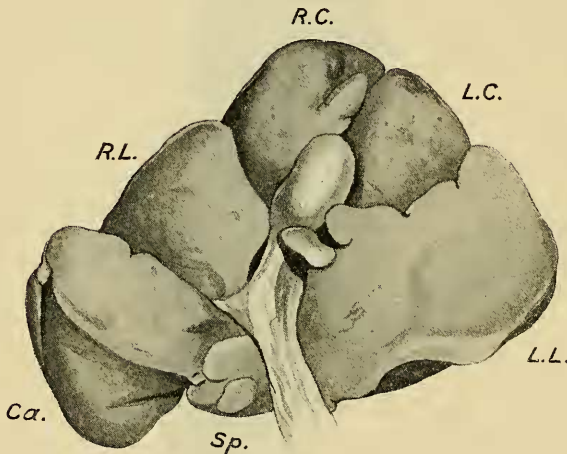
Caecum and colon of *Pithecia pithecia* partly cut open to show internal structure.

A. Sacculations of colon shown as deep recesses. B. Opening of ileum.
C. Caeco-colic valve.

The *small intestine* measures 40 inches, the *colon* and *rectum* together 14, and the *caecum* 3 inches. The proportions are thus rather different from those of *Pithecia monachus* as described by Flower, in which species the small intestine is 50 and the large intestine 22 inches. From some manuscript notes left by the late

Mr. W. A. Forbes, I find that the proportions of the various regions of the alimentary tract of *Pithecia albinasa* are again very different. The small intestine in a female of that species was $87\frac{3}{4}$ inches long and the large intestine $121\frac{1}{2}$ inches. Some measurements of the two species *P. monachus* and *P. satanas* are given by Mr. Forbes in his paper upon the Ouakari Monkeys already quoted here. When the body of the monkey was opened the *omentum* was seen to extend right down the abdominal cavity. It is attached for the length of an inch and a quarter to the end of the ascending and the beginning of the transverse colon. The commencement of the omental attachment to the colon is situated about $1\frac{1}{2}$ inch from the ileo-cecal valve. The relations of the omentum to the colon appear to vary considerably among the Primates.

Text-fig. 292.

Liver of *Pithecia pithecia* seen from abdominal surface.

Ca. Caudate lobe. L.C. Left central lobe. L.L. Left lateral lobe.
R.C. Right central lobe. R.L. Right lateral lobe. Sp. Spigelian lobe.

The *cæcum* (see text-fig. 290, p. 934) shows a fixed and uniform curve of a semicircle. The frænum attaching it to the ileum extends to within a sixth or an eighth of an inch from its extreme end. It is marked off from the colon by a distinct oblique groove, and the commencement of the *cæcum* is of slightly greater calibre than the adjoining colon. The *cæco-colic* valve, which corresponds of course to the constriction distinguishing the *cæcum* and colon, superficially extends for rather more than halfway round the periphery of the gut. A dense mass of tissue projecting into the colon from about the middle of this bears the origin of the ileum.

The first two inches of the *colon* are sacculated, and the very deep sacculations are shown from the inside in the illustration (text-fig. 291, p. 935). There were three of these, the first being larger than the two following. Along one side of this sacculated region of the colon was a distinct tenia, but not on the other.

The *liver* is represented in text-fig. 292 from the abdominal aspect. It will be seen to present no very remarkable features, and is very like those of other Platyrrhine Monkeys, e.g. *Callithrix* (see Beddard, 1, pl. xi. figs. 1, 2). The left lateral lobe gives off to the right two subsidiary outgrowths, of which one covers over the cystic duct and nearly touches the right lateral lobe*. The well marked Spigelian lobe is divided into three lobules. The *bile-duct* joins the *cystic duct* about half an inch from their common orifice into the duodenum. There is practically no *hepato-renal ligament*, and the *hepato-caval ligament* is very short, lying just above the right kidney and not extending as far down as it. These ligaments agree according to my experience with the corresponding ligaments of *Cebus flavescens*.

§ Heart and Blood-vessels.

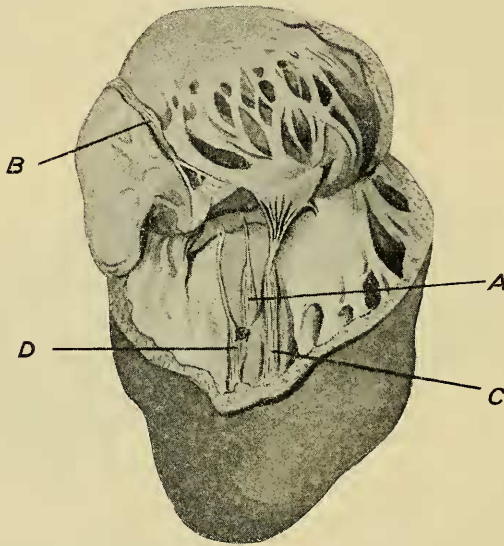
The accompanying illustration (text-fig. 293, p. 938) exhibits the interior of the right ventricle with the auriculo-ventricular valve and the papillary muscles attached thereto. The free wall of this ventricle is beautifully sculptured, the sculpturing being in excess of that which is sometimes met with in the same wall of the right ventricle of other mammals. I do not, however, wish to be understood as suggesting that this very marked sculpturing of the free ventricular wall is a character of the species or of the genus. The sculpturing forms a basketwork towards the middle of the wall of this ventricle; superiorly, near to where the auriculo-ventricular valve takes its origin, five or six strap-like bands free themselves altogether from the meshwork and run approximately parallel to each other to end upon the attached margin of the valve. The three cusps of the tricuspid valve itself are each provided with a papillary muscle, all of which are shown in the figure referred to. The middle papillary muscle arises, as is sometimes the case in other mammals, from the free wall of the ventricle. In common with the moderator band arises a slender papillary muscle which ends in chordæ tendineæ attached to the septal half of the valve collar; and another papillary muscle, also ending in connection with the septal half of the valve collar, lies close by and is also indicated in the accompanying text-figure.

The precise arrangement of the intercostal arteries varies so much among mammals that it is always worth while to describe

* This almost free flap of hepatic tissue occurs in several monkeys. I have myself recorded it in *Callithrix* (as has Weldon) and in the ally of the present species, *Pithecia albinasa* (3, p. 364).

them in any particular type with a view of gathering material for a future generalisation. In *Pithecia pithecia* the arteries in question arise from the aorta by paired orifices, as is shown in the accompanying figure (text-fig. 294 A). In previous descriptions of the intercostal arteries of a few mammals, I have described the whole series of arteries which arise from the aorta on the dorsal surface behind the origin of the great vessels of the neck and in front of the celiac and renal arteries. These arteries undoubtedly form a morphological series, though one or two of the more anterior really are bronchial arteries, being the nutritive arteries of the lungs. It is, however, impossible to

Text-fig. 293.

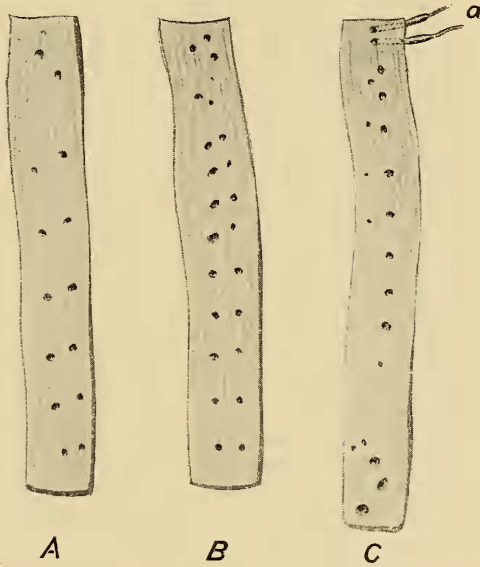
Interior of right ventricle of *Pithecia pithecia*.

A & D. Papillary muscles of septal half of valve.
B & C. Papillary muscles of outer flap of valve.

draw a hard and fast line between such arteries as are distributed to the lungs and those which supply the dorsal parietes and are thus more accurately to be termed intercostals. For some of the arterioles which go to the lung tissue arise from intercostals, while others are undoubtedly independent. A further proof of the impossibility of absolutely distinguishing the two is to be seen in the case of *Colobus guereza*, the intercostals of which will be described later; and I refer to the ensuing description of the arteries of that species. Taking this view, the first three

arteries of the series now under consideration in *Pithecia pithecia* form a triangle with the apex pointing to the right, then follow six pairs of arteries, the orifices of which are rather obliquely set with reference to each other and which are rather wide apart. Thereafter the intercostal arteries are more symmetrical and perhaps closer together.

Text-fig. 294.



The commencing aorta of several Monkeys cut open to expose the origins and arrangement of the intercostal arteries, for an explanation of which see text.

A. *Pithecia pithecia*. B. *Cebus fatuellus*. C. *Colobus guereza*.

For the purpose of comparison, I have examined the corresponding arteries in the New World Monkey, *Cebus fatuellus*. There is a general correspondence with *Pithecia*, but differences of detail. Thus the triangle of presumably bronchial arterioles (text-fig. 294 B) is nearly the same. After this is a series of five pairs of intercostals which are closer together than in *Pithecia*, but oblique in the same fashion with the exception of the first pair which are oblique in the reverse direction, the right-hand artery being in advance of the left-hand artery. After this series the intercostals become symmetrical, and there are four pairs of these in front of the celiac artery. An example of *Colobus guereza* came to hand at the time that I was engaged in studying the anatomy of *Pithecia pithecia*, and I have drawn up some notes upon its intercostal arteries with a view of comparison on the points dealt with in the present communication. Naturally there are

differences, and this West African Monkey differs more from *Cebus* and *Pithecia* than are those two genera from each other. The intercostal series (text-fig. 294 C) are single arteries in their origin, and only divide later to form the two intercostals of the two sides of the body. The first two arteries of the series are closer together than those which succeed, and I ascertained that they are bronchial arteries, for I succeeded in tracing them into the tissue of the lung. As I have already mentioned, the condition of these arteries furnishes another argument in favour of regarding the whole series of arteries as forming morphologically one series. For each of these first two arteries was fully as large an artery as the intercostals proper. The artery in each case continued for some distance of the same calibre and then suddenly diminished in calibre to a slender twig running to the lung tissue. It looks indeed as if at the point of sudden diminution in calibre there was originally an intercostal arising here which has become aborted. And this seems to be the most probable explanation of the anatomical fact which is illustrated in the accompanying figure (text-fig. 294 C, a). The number of intercostals in this animal was nine after the two bronchials already referred to. All of these followed each other at approximately equivalent intervals. The first five were provided with a small arteriole to the right side, which I do not regard as a small additional intercostal, but as an œsophageal artery. After the ninth intercostal there was a considerable vacant space, and then just in front of the large visceral trunks a single pair of intercostals; in this region, therefore, alone are the intercostals paired trunks.

I fancy that the Primates generally will prove to possess invariably a right *azygos* only; though, indeed, materials for forming an opinion upon this point do not exist to any great extent. My own experience, however, points in that direction; and in any case *Pithecia pithecia* has an *azygos* upon the right side only which gives off nine branches. Of these the second, which is correspondingly bifurcate, supplies two intercostal spaces. I have a note by Mr. Forbes as to the *azygos* of *Pithecia albinasa* which he describes as "trifid," meaning, I take it, that the anterior two branches are of equal calibre with the main longitudinally running trunk.

Although I found the kidneys to be pretty well symmetrical, the left *renal* vein flowed into the postcaval at a point a little above the right renal vein—a converse asymmetry being the rule among Mammals. This state of affairs appears to agree with that recorded for *Pithecia monachus* by Flower (5, p. 332), who remarks that the right kidney is placed slightly lower than the left. On the other hand Forbes records the converse conditions in *Pithecia albinasa*. As in other Primates, the right *spermatic vein* flows into the postcaval a little below the right renal, while the left spermatic enters the left renal. I may take this opportunity of stating that in *Colobus guereza* the spermatic and renal veins were precisely as in *Pithecia pithecia*.

§ *Lungs and Spleen.*

Finally, I have to record that the right *lung* consisted of four lobes and the left of two only; and that the spleen was long and narrow, $3\frac{1}{4}$ inches in length by $\frac{1}{2}$ inch greatest breadth.

(2) *Some Notes upon Pithecia monachus.*

Since writing the above I have had the opportunity of dissecting an example of *Pithecia monachus*, which died in the Society's Gardens on Dec. 11th, 1909. It was a young male, and I have therefore been able to compare very particularly the structure of the larynx with that of its congener.

Generally speaking, I quite confirm the account of the anatomy of this species by the late Sir William Flower to which I have referred in my description of *Pithecia pithecia*. There are, however, certain details to which he has not referred, and I am able to compare the two species in respect of these and of other points.

The tongue appears to be almost exactly the same as in *Pithecia pithecia*. The three circumvallate papillæ are present, and, as in *P. pithecia*, the fungiform papillæ are mainly upon the flat lip of the tongue extending backwards along its sides, the middle dorsal surface of the tongue being free from them. A prominent fungiform papilla lies just in front of each lateral circumvallate papilla. In *P. pithecia*, as already noted, there is only this fungiform papilla on one side. Mayer's organ is equally conspicuous and of about the same size in the two tongues.

The palatal ridges differ slightly in the two monkeys, showing at the same time a general agreement. There are in both eight ridges on each side of the palate of which the anterior series of four are more complete than the posterior series.

I found that the proportions of the intestine in this young male were rather different from those described by Flower in a young female*. In my specimen the small intestine was 42 inches, the colon and rectum 14 inches, and the cæcum $1\frac{1}{2}$ inch. In Flower's specimen the same measurements were 50 inches, 22 inches, and $4\frac{1}{2}$ inches.

I have figured on a previous page the interior of the cæcum of *Pithecia pithecia*. That of *P. monachus* is rather different, except of course in essentials. The same valve separates the cæcum from the colon, and the ileum opens on to the colic side of this raised fold. But in *P. monachus* there are none of the complications shown in the colon (*i. e.* the series of deep depressions) of *P. pithecia*. The internal surface of both colon and cæcum is quite smooth and even.

The omentum extends right down the abdominal cavity, and is attached for the distance of barely an inch to the ascending and

* The size of the two specimens appears to be about the same, *i. e.* 11 inches of body.

transverse colon, this attachment commencing about an inch and a quarter beyond the entry of the ileum into the colon. The hepato-caval ligament is small, and at its extremity remote from the liver just strays on to the kidney on one side and on to the mesocolon on the other.

The postcaval vein and its branches are exactly as I have described them in *Pithecia pithecia*.

The intercostal system of arteries however differs. As in *P. pithecia*, there are first of all three branches which are presumably œsophageal and pulmonary in distribution. The first two intercostals are unpaired at their origin, and the subsequent series though paired are much closer together than in *Pithecia pithecia*. Whether this is really a specific difference remains of course to be proved.

I naturally paid very particular attention to the larynx of this species for purposes of comparison with the rather abnormal larynx of *Pithecia pithecia*, and discovered some differences which however may be due to the greater immaturity of my example of *Pithecia monachus*. In this specimen in fact the two posterior molars of each side of each jaw were quite invisible, there being thus only four grinding teeth present out of a total of six on each side of each jaw. The canines were considerably smaller than those of the *Pithecia pithecia*, in which all the molars were present.

In general aspect the larynx of this monkey was like that of *Pithecia pithecia*, but considerably smaller. This must be due to youth, to some extent at any rate; for the interspace between the rami of the lower jaw was less in this *Pithecia* than in the other. The diameter of this interspace measured at the beginning of the ascending part of the mandible was 34 mm. in *P. pithecia*, and 28 mm. in *P. monachus*. The mandible is, however, altogether much smaller in the *P. monachus*. But while the two individuals differ in actual size and in the size of the parts adjacent to the larynx, there is nothing like such an enormous difference as that which exists between the larynges of the two species of *Pithecia*, for the thyroid cartilage in *P. monachus* measures only 9 mm. in length by 12 mm. in breadth. It is therefore about half the size of that of *P. pithecia*. The proportions of length and breadth are also, it will be observed, rather different. The thyroid is broader in the younger *P. monachus*. This may be a specific difference. I regard as a sign of immaturity the form of the thyroid cartilage. In the adult *Pithecia pithecia* it will be remembered that the ventral surface of the thyroid is smooth and rounded. In the present species there is anteriorly but not posteriorly a distinct though low median ridge, thus preserving the more usual form of the thyroid cartilage in Mammals. This ridge easily escapes the eye owing to the fact that it is but little pronounced. It is nevertheless present. It is quite easy to suppose that the subsequent growth of the thyroid

cartilage might obliterate this ridge and lead to the conditions observable in the adult *Pithecia pithecia*. On the other hand, no positive facts exist with reference to the growth of the larynx in any *Pithecia*, and it may well be that the differences which I am describing are actually specific differences after all.

The body of the hyoid, I may remark, is quite as large and as well ossified as in *P. pithecia*.

List of Literature referred to.

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